

REMARKS

Claims 1-5 are pending. Claim 5 has been added herein. Support for the limitation is found at Fig. 5(B) and page 14, line 14 to page 16, line 7 of the specification. Applicants' representatives thank Examiner Tapolcai for the courtesies extended to the undersigned attorney during the interview conducted on March 30, 2005. Applicants' separate record of the substance of that interview is incorporated into the following remarks.

Applicants' Response to the Claim Rejections under 35 U.S.C. 103(a)

The rejection of claims 1, 3, and 4 has been maintained under 35 U.S.C. 103(a) as being unpatentable over Kawasaki et al. (sic).¹ The Office Action focused the rejection on the drawing of Fig. 1 of the reference. Specifically, the Office Action points to the diaphragm support 35 as a center disk which is in apparent slight overlap with the bottom surface of the metal wall 34 of the airtight chamber 3. See also column 3, line 60 to column 4, line 2. The Office Action states that the diaphragm support 35 is capable of contacting the bottom surface of the metal wall 34. It concludes that because of this showing in the figure, the claimed invention would be obvious to one skilled in the art.

In order for claims to be obvious under 35 U.S.C. §103(a), the cited prior art must teach or suggest each limitation of the invention so that the combination resulting in the invention would be obvious to one skilled in the art. An element of claim 1 requires: "the power element causes a center disk ... to be brought into abutment with an inner wall of a housing toward the valve portion, thereby defining the maximum valve lift of the valve portion." As discussed in the course of the interview and the response filed December 10, 2004, it is the center disk brought

¹ The Examiner refers to "Kawasaki". However, there is no such reference at issue in either PTO-1449 or 892. Hence, we believe it is safe to assume the Examiner intends Kawakami et al. US[5,352,207.

into abutment with an inner wall of a housing which defines the maximum valve lift. As discussed during the interview the Examiner interprets any possible abutment between the inner wall and a center disk as resulting in defining the maximum valve lift. Applicants respectfully submit as follows, that more disclosure in the prior art would be required for the claimed limitation to be obvious.

As noted in the interview Kawakami et al. is not teaching or suggesting any structural characteristics of the center disk 35 to define the maximum valve lift of the valve position. Kawakami is directed to providing an expansion valve and a control mechanism utilizing a steel ball for sealing the filling hole to create high sealing reliability. See column 2, lines 20-24. In other words, there is no teaching or suggestion in Kawakami et al. that an abutment of center disk to bottom surface of the chamber creates the maximum valve lift. FIG.1 does not provide all necessary teaching for one skilled in the art to reach this conclusion. It is also important to note that the Figs. 5(A) and 7 designated “prior art” in the current application are near identical to Fig. 1 of Kawakami et al. The current specification sets forth the state of the prior art regarding valve lift and stoppers. Kawakami et al. does not. Hence, in light of applicants’ disclosures one skilled in the art reviewing Kawakami et al. will look to the abutment of the disk 35 with the holder [122 in FIG. 5(A), not designated in Kawakami et al.].

A great deal of forethought and experimentation was needed to derive the present invention. As noted above, Kawakami et al. does not provide any discussion at all about valve lift. However, this is a key concern in applicants’ specification. As discussed in the specification from page 14 to 15, the expansion valve according to the present invention results in the maximum stroke of the shaft being smaller than that of the conventional expansion valve. The expansion valve of the present invention accomplishes this by changing the stopper of the center

disk 17 from the holder 22 to the lower housing 15. See page 14, lines 1-13 of the specification. As detailed in the specification page 15, lines 5-9 the number of parameters determining the stroke is four in the conventional embodiments.

However, as described at lines 10-25, page 15 of the specification, the present invention, by the center disk 17 abutting the lower housing 15 the number of parameters becomes two. Fig. 1 of Kawakami et al. does not provide any teachings or motivation similar to that of the present application. Hence, in view of Kawakami et al. one skilled in the art would not be able to arrive at the claimed limitation that the center disk contacting the lower surface results in the maximum valve lift.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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